

awkward thing was that the young German architect who had come to Naples with Dohrn, and was living with us in the Palazzo Torlonia, suddenly went quite mad, and had to be sent home under escort. Happily he completely recovered. A great feature in our life at the Palazzo Torlonia was the occupation of one of the chief "flats" (ours was high up in a building against the Posilippo cliff) by the Baranowski family. Dohrn had made their friendship in Sicily a year before, and we spent nearly every evening with them. Baranowski had been governor of the Russian province of Orenburg, and was now employed by the Russian Government on important missions in China. His wife, a Polish lady, her sister, two daughters, and a son, took up their residence in the chief "suite" of our Palazzo, and in the late winter were joined by Baranowski himself, whose official business did not allow him to remain for long. All those dear friends of the Palazzo Torlonia are now dead and gone, with the exception of the elder of the two sisters, who three or four years later married Anton Dohrn, and is the mother of his four now grown-up sons. She nursed him in his last illness during the past six months at Munich. In 1874, when the Naples laboratory was built and its machinery at work, its rooms filled with professors and investigators from all parts of Europe, including the wonderfully gifted and beloved Frank Balfour and his friend Dew-Smith, I again spent three months at Naples. Dohrn was suffering from the labours he had gone through in securing the position of the laboratory, and also from the climate of Naples. He was engaged, but his marriage was delayed and his future wife's family were no longer at Naples. A very remarkable Englishman, Grant by name, who had been lecturer in English literature and a close friend of Dohrn's at Jena, was with him, and remained for some years in Naples. His delightful book, "Stories of Naples and the Camorra," is the memorial of the work Grant did there. He died some years ago. Later I made two short visits to Naples, and saw my friend with his family growing up around him. In the 'nineties he visited Oxford and received an honorary degree. For some years the University, following the example of Cambridge, had rented a table at the Naples station, and provided the travelling expenses of a graduate selected to pursue investigation there.

During the thirty-six years of its existence, the Naples station has increased vastly in size and the perfection of its organisation. Its biological library is one of the best in the world, its staff of servants, assistants, and skilled workers of all kinds unrivalled. Having secured capable assistants in all departments and the funds for carrying on the now large and celebrated institution, Dohrn was able to pursue some of the problems of vertebrate morphology which had occupied his mind already in Jena days. I think that the most important of the general ideas which he had arrived at in those early times was, first, that degeneration or simplification of organic structure is a result of evolution as well as increase of complexity, and that the relatively simple or less complicated members of a group are not necessarily more primitive or archaic than the more elaborately structured members. Also of great value was his determination to take a free and unprejudiced view as to the lines of the animal pedigree, and he particularly objected to being tied in any way to the conclusions of Haeckel on this subject. He successfully resisted the notion that either Amphioxus or the Ascidians represent in any definite or complete way the lower phases of vertebrate ancestry. He held that they were specialised, and, in the sense of being simplified, degenerate. He sought himself to connect the verte-

brate stock with that of the chaetopod worms; but though this hypothesis led him into many interesting discoveries of detail—which are published in a series of papers in the *Mittheilungen* of the Zoological Station of Naples—it cannot be said to have been placed on a secure footing, and we are still speculating, with very little assurance, as to the nature and structure of the pre-vertebrate ancestors of Vertebrata.

Dohrn was a great lover of classical music, like his father, and I think that music and philosophy were his chief relaxations from the severe labour of business correspondence and scientific discussion. He was very fortunate in having the opportunity, some fourteen years ago, of receiving the German Emperor at the Naples laboratory. He was able thoroughly to interest that able man in the work of the institution, who recognised that it was a real honour and glory to the German name, and accordingly gave to it his warm friendship and support. From that time forward large assistance has been given to the Naples laboratory from Berlin, and I believe that some definite responsibility in regard to the institution—involving possibly its ownership—now passes to certain authorities in Berlin.

It is a great and satisfactory thing which I have had to record here—the success of a noble effort. Dohrn's example in founding a "station" for marine zoology has been followed in a modest way elsewhere. The Marine Biological Laboratory at Plymouth, which I joined with others in founding some twenty-five years ago, was, confessedly, an attempt to provide on our English coast an institution similar to, if less spacious than, that established by Anton Dohrn at Naples. The Plymouth laboratory has done good service to science and to fishery interests, but London is not Berlin, nor are the ways of British departments of Government in regard to science in any way similar to those of the German Imperial Government. The former are ignorant, envious, and destructive; the latter are intelligent, friendly, and helpful.

E. RAY LANKESTER.

NOTES.

IN reply to a question asked in the House of Commons on Thursday last, the Postmaster-General stated that arrangements have been completed with the Marconi Company for the transfer to the Post Office of all their coast stations for communication with ships, including all plant, machinery, buildings, land, and leases, &c., and for the surrender of the rights which they enjoy under their agreement with the Post Office of August, 1904, for licences or facilities in respect of coast stations intended for such communication. In addition, the Post Office secures the right of using, free of royalty, the existing Marconi patents and any future patents or improvements, for a term of fourteen years, for the following purposes:—communication for all purposes between stations in the United Kingdom and ships, and between stations on the mainland of Great Britain and Ireland on the one hand and outlying islands on the other, or between any two outlying islands; and (except for the transmission of public telegrams) between any two stations on the mainland; and on board Post Office cable ships. All the stations will, under the International Radio-telegraphic Convention, be open for communication equally to all ships, whatever system of wireless telegraphy they may carry and the Post Office will be free to use or to experiment with any system of wireless telegraphy at its discretion. All inland communication of messages by wireless telegraphy will be entirely under the control of the Post Office. Arrangements have also been made with Lloyd's for the transfer

to the Post Office of their wireless stations for communication with ships, and for the surrender of all claims to licences for such communication.

AN Italian National League against malaria has recently been formed, and the first meeting is now taking place at Milan. The inaugural address is being delivered by Prof. Baccelli, and the following communications have been promised:—the present state of knowledge in regard to malaria, by Prof. Bordoni-Uffreduzzi; prophylaxis against malaria, by Prof. Castellino; the pathology of malaria, by Prof. Golgi; some questions relating to the pathology and treatment of malaria, by Prof. Grassi; little known abortive forms of malaria, by Prof. Queirolo.

THE programme of the second International Congress for the Repression of Adulteration in Food, Chemical Products, Drugs, Essential Oils, Aromatic Substances, Mineral Waters, &c. (to be held in Paris on October 17–24), has now been issued. The discussion of the various subjects will be classified in the following sections:—(1) wines, alcohols, syrups, liqueurs, beer, cider; (2) farinaceous foods, baking, pastries, meat and other pastes, spiced confectionery; (3) cocoa, chocolate, confectionery, honey, sugar, and sugar candy; (4) vinegar, mustard, pepper, spices, tea, coffee, chicory; (5) butter, milk, cheese, eggs; (6) lard and edible fats, margarine, provisions preserved in oil, bacon, sausages and pork products, salted provisions, and canned and bottled goods; (7) drugs, chemical products, essential oils, &c.; (8) mineral water (medicinal), aerated waters, ice.

IN opening the *Nimrod* Antarctic Expedition last week, the Lord Mayor of London stated that he intended to call a meeting at the Mansion House to initiate a fund towards the expenses of the forthcoming expedition under Captain Scott to the south polar regions.

It is stated in the *Times* that a telegram has been received from Dr. T. G. Longstaff to the effect that he has arrived at Leh, in Ladak, after having connected the Tarim river with the Saichar glacier, making it about fifty miles long. This would appear to mean that the Tarim or Yarkand Darya river, which flows north from the Himalayas towards the Taklamakan desert, and had hitherto been supposed to rise near the Karakoram Pass, originates much further to the west in the Saichar glacier. On existing maps, what was supposed to be a branch of the river is shown to originate in the Saichar glacier, and it is that branch, apparently, which Dr. Longstaff makes out to be the main river.

THE Ottawa correspondent of the *Times* states that a telegram has been received by the Canadian Marine Department from Captain Bernier, of the Canadian Government steamer *Arctic*, which left Quebec fourteen months ago to cruise in the Arctic region, announcing his arrival at Point Amour, Labrador. Captain Bernier says that he has accomplished his mission, which was to report upon the ice conditions in Hudson's Straits in 1908 and then to proceed north and take possession of Banks Land and other Arctic lands for Canada; he also states that he discovered the record left at Winter Bay in 1819–20 by Lieut. (afterwards Sir E.) Parry.

PROF. J. V. HEPFERGER has been appointed director, and Dr. J. Palisa vice-director, of the Imperial University Observatory, Vienna.

MR. PHILLIP FOX, formerly of the Yerkes Observatory, has now assumed the directorship of the Dearborn Observatory, Evanston, Illinois, in succession to the late Prof. G. W. Hough.

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WE learn with regret that M. J. A. Fraissinet, secretary of the Paris Observatory, died, in his sixty-third year, on August 29.

THE Denny gold medal has been awarded by the Institute of Marine Engineers to Mr. W. P. Durnall, for his paper on the generation and electrical transmission of power for main marine propulsion and speed regulation, which was read at the Franco-British Exhibition in July, 1908.

AS was announced in *NATURE* of July 15, a model engineering exhibition will be held at the Royal Horticultural Hall, Westminster, on October 15–23. We learn from the promoters that the exhibition will contain a number of exhibits of exceptional interest, e.g. model aeroplanes, working model steam and electric railways, electric clocks, light machine tools, model motor-boats, a model engineer's workshop in operation, and a working demonstration of wireless telegraphy by the latest Marconi apparatus.

SIR WILLIAM MACGREGOR, who is shortly to take up his duties as Governor of Queensland, was entertained at luncheon last week at Liverpool, and, speaking in reply to the toast of his health, said he had known the Liverpool School of Tropical Medicine from its inception. He had spent thirty-one years in the service of the country in the tropics, and he thought that few people had had a better opportunity than he had of seeing how much an institution of this kind was wanted in the world. Few men could better appreciate the amount of good it had been able to do. He had had the opportunity of renewing his studies at the school, and what he had been able to learn had been of considerable use to him and would be of great value to others. It was a great school, not on account of its size, but because it was the nucleus which was going to scatter broadcast tropical schools all over the Empire. The beginning of the Liverpool School of Tropical Medicine they owed from a scientific point of view to Major Ross, but to Sir Alfred Jones they were almost equally indebted. He looked upon the school as being the pioneer of all other schools of this kind that were to follow.

A COURSE of twelve free lectures under the Swiney trust will be begun in the lecture theatre of the Victoria and Albert Museum, South Kensington, on Saturday, November 6, by Dr. T. J. Jehu, who will take as his subject "The history of north-west Europe during Tertiary times."

THE new session of the Royal Geographical Society will open on November 8, when a paper entitled "Two Journeys in Bhutan" will be read by Mr. J. Claude White. The other papers expected to be delivered at meetings before Christmas are:—journey into northern Arabia, by Mr. Douglas Carruthers; explorations in the Hispar region, by Dr. Hunter Workman and Mrs. Bullock Workman; and a naturalist's travels on the Congo-Zambezi watershed, by Mr. S. A. Neave. The papers expected after Christmas are:—an expedition to the North Pole, by Commander Peary; explorations in and around Lake Chad, by Captain J. Tilho; explorations in Fernando Po and the Cameroons, by Lieut. Boyd Alexander; explorations in southern Nigeria, by Mr. P. A. Talbot; explorations in and around Magellan Straits, by Dr. K. Skottsberg; a journey from Uganda by Lake Rudolf to Abyssinia, by Captain C. H. Stigand; explorations in the Aldabras, by Mr. J. C. F. Fryer; climbing and exploring in Central Asia, by Dr. T. G. Longstaff; boundary-making and ex-

ploration in Bolivia and Brazil, by Major P. H. Fawcett; exploration in the Kasai region of the Congo, by Mr. E. Torday; a journey in South-west Africa, by Prof. Pearson; geographical conditions affecting the development of Australia, by Prof. J. W. Gregory, F.R.S.; and geographical conditions affecting the development of Canada, by Mr. W. L. Grant.

ARRANGEMENTS have been completed whereby a standard clock at the Hamburg Observatory, Bergedorf, is connected to the trunk telephone system. A sounder automatically emits a siren-like note from the fifty-fifth to the sixtieth second of each minute—mid-European time—and this goes automatically to all the receivers connected, at that time, with the special exchange number which has been allotted to the time signal. Thus Hamburg and neighbourhood and other towns of east Germany are supplied with a ready means of ascertaining the standard time.

THE past summer was characterised by cool and unsettled weather, and, with the exception of about a fortnight at the commencement of August, there was a peculiar absence of warm days. For the six months April to September the observations at Greenwich show that there were in all only fifty-three days with a temperature of 70° or above; of these, twenty occurred in August and eighteen in July, whilst there was only one instance in September. During the last quarter of a century the only years with as few warm days are 1888, 1894, and 1903. On the average of the last fifty years, there are seventy-four such warm days. There were nine days with a temperature of 80° or above, and in the last five years the number varies from two in 1907 to twenty in 1906. The absolutely highest temperature during the summer was 80°, on August 12 and 15. The aggregate rainfall at Greenwich for the six months is 14.04 inches, which is 1.75 inches more than the average summer fall of the last fifty years, the mean being 12.29 inches. With the exception of the summer of 1903, when the aggregate rainfall was 22.21 inches, there has been no summer as wet since 1888. There was an excess of rain in all the summer months except May and August, and the wettest month was June, with a total of 3.65 inches, which is 1.65 inches above the average. The early summer months were exceptionally bright, and a record duration of sunshine for any month was established in May, with 326 hours, but most of the subsequent months had a deficiency of bright sunshine.

SOME remarkable experiments on the reproductive apparatus of insects have recently been conducted by Prof. J. Meisenheimer, and are recorded by him in a treatise ("Experimentelle Studien zur Soma- und Geschlechts-Differenzierung") published by Fischer at Jena. The results of this investigation have been summarised by the author in the *Naturwissenschaftliche Wochenschrift* for August 29. The species selected for experiment was the well-known "gipsy moth," *Lymantria dispar*. The reproductive glands were removed from larvæ of both sexes, in some cases immediately after emergence from the egg. The difficulty of operating upon larvæ barely three millimetres long must have been great; it was, however, successfully overcome by aid of the galvanic cautery. In larvæ of a larger growth an actual transplantation was effected of testis into the female and ovary into the male. Details of much interest are given in the original paper; the main result is that, in strong contrast to the conditions obtaining in vertebrates, the removal of the primary sexual organs has no effect upon the development of the remainder of the sexual apparatus, or of the secondary

sexual characters whether somatic or psychic. This takes its normal course even in the presence of a successfully transplanted primary organ of the opposite sex.

To the August number of the *National Geographic Magazine* Mr. H. M. Smith, U.S. Deputy Commissioner of Fisheries, communicates a very graphic and interesting account of the herring-fisheries of the world, in which stress is laid on the importance and value of this industry, which has determined the position of cities and influenced the destiny of nations. In America large numbers of the smaller-sized herrings are tinned and sold as sardines. In place of the methods adopted on this side of the Atlantic, weirs of stakes and brushwood play an important part in the American herring-fishery. As the average tidal rise and fall is 20 feet, and in spring nearly 30 feet, the weirs are necessarily large and strongly built structures. These weirs are fished at low water, when the fishermen enter in boats, set a seine and haul its ends together, and proceed to take out the fish in huge dip-nets. Sometimes, however, the herring are left high and dry by the falling tide, when they are collected by hand or with pitchforks.

IN No. 29 of the "North American Fauna," published by the Biological Division of the U.S. Department of Agriculture, Mr. E. W. Nelson gives an exhaustive account of the Leporidae of North America, of which no fewer than ninety-seven species and races are recognised, against eighteen in 1887. Although in America all the members of the family are commonly termed rabbits, the author suggests that the name rabbit should be restricted to the so-called "cotton-tails," which produce blind and naked young in burrows or other concealed cavities, while the species related to the typical *Lepus* of the Old World should be designated hares. The fact that the cotton-tails resemble the European rabbit in the matter of habits and the condition of the young at birth goes far to justify their separation as *Sylvilagus*, although that term might perhaps be preferably employed in a subgeneric rather than in a generic sense. It is pointed out that both "jack-rabbits" and "cotton-tails" are serious pests to the agriculturist and horticulturist in the United States, although the former are considerably the worse of the two. On the other hand, these rodents form a valuable asset to the country as a source of food and of fur.

IN the annual report of the Natural History Section of the Indian Museum for 1908-9 the director states that the Museum Conference at Calcutta has done much to facilitate the interchange of opinions and specimens between the various museums of the country. At that conference it was agreed that the Calcutta establishment was to be the depository for all type-specimens, except such as, for climatic reasons, would be safer in London. Among recent additions attention is directed to a skeleton of the Mishmi takin (*Budorcas taxicolor*), which is alleged to be the only one in existence. If those of the living individuals of the species be excluded, this statement may be literally true, although it might have been added that the British Museum possesses skeletons of the Bhutan race (*B. t. whitei*) and of the Sze-chuen *B. tibetanus*.

IN the September number of the *Zoologist* Mr. G. B. Corbin states that the smooth snake (*Coluber laevis*, or *austriaca*) is still to be found in the New Forest and on the heath-lands on the opposite side of the Avon, where it was first recognised as a British species. Unfortunately, a portion of its habitat is slowly but steadily coming under the hand of the builder.

WE have received three parts (Nos. 1, 4, and 5) of a new Bulletin of Economic Biology, issued by the Depart-

ment of Agriculture of the Federated Malay States, and published at Kuala Lumpur. No. 1, by Mr. H. C. Pratt, the Government entomologist, deals with termites found in rubber-plantations; No. 4, by the same author, is devoted to a zygaenid moth (*Brachartona catoxantha*), the larva of which infests cocoanuts; while in No. 5 Mr. W. J. Gallagher discusses the best means of destroying the rats, which do serious damage to rice-fields.

MR. H. M. LEAKE has followed up his first paper on the experimental breeding of Indian cottons by a second, published in the Journal and Proceedings, Asiatic Society of Bengal (vol. v., No. 1). The author's object is to discover characters which behave as units under artificial crossing. In the present paper he records the constancy for Indian cotton plants of the position of the accessory bud on the main stem, i.e. certain plants regularly produce the accessory bud to the right, others to the left, of the main bud, but this character does not follow the Mendelian laws. Similarly, the main stem is always a monopodium, but the subsequent branching may be monopodial or sympodial; these are two distinct types, of which the sympodial is dominant. Further, it was observed that early flowering is a feature of the sympodial type, and herein lies the importance attached to a differentiation of Indian cottons according to their mode of branching.

THE thirty-fourth series of contributions to the flora of Africa, published under the direction of Dr. Engler, occupies the bulk of Engler's *Botanische Jahrbücher* (vol. xlii., parts i. and ii.). An important revision of African species of the genus *Impatiens* is supplied by Dr. E. Gilg, and Dr. Engler contributes descriptions of several new species, notably of the genus *Mesembrianthemum*. The classification of African species of the polymorphic genus *Senecio* is discussed by Dr. R. Muschler. Five subgenera, comprising about 500 African species, are demarcated. The subgenus *Eusenecio* is further divided into many sections, of which twenty are added by the author. The sections *crassuli* and *kleinoides* are succulents, similar in this respect to the subgenus *Kleinia*; the section *tuberosi* is based on the production of large tubers; a large group is that of climbing plants, *scandentes*; other sections are the *pinifolii*, *rhizomatosi*, and *arborei*, the latter being represented by *Senecio Johnstonii*, a tree attaining a height of 45 feet.

A SECOND set of studies of tropical American ferns, by Mr. W. R. Maxon, is published in the Contributions from the United States National Herbarium (vol. xiii., part i.). The first paper deals with ferns collected in Guatemala by Baron von Türckheim, principally in the humid mountainous region of Alta Verapaz. The determinations include several new species, notably an interesting *Campylopus* and an epiphytic *Lycopodium*, also the species *Diplazium ternatum*, formerly recorded from Mexico. The author also supplies a revision of the West Indian species of *Polystichum*, with a key for determination. Diagnostic characters are sought in the presence or absence of a proliferous bud upon the rachis. Where present, it may arise immediately above the uppermost pinna, as in the species *heterolepis*, or on a whip-like prolongation, as in *P. decoratum*.

THE Cambridge Scientific Instrument Company, Ltd., has recently issued a new catalogue explanatory of its microtomes and accessory apparatus. The ingenious rocking microtome is, of course, universally known; the present-day instrument shows several improvements on the original pattern, notably in the fitting of the rocking arms. A second type of microtome, also a rocker, cuts flat sections, and is suitable for objects up to a diameter of

30 mm., while a larger microtome has been recently designed which will take objects up to 40 mm. diameter, and with which hard substances, such as bone or cartilage, can be manipulated.

THE Bulletin of the Johns Hopkins Hospital for August (xx., No. 221) is devoted to tuberculosis. The subjects dealt with are tuberculin treatment of dispensary patients, report of the work of the Phipps Dispensary for Tuberculosis, Marmorek's serum in the treatment of pulmonary tuberculosis, and the kind of employment suited to arrested cases of the disease. In the last it is concluded that farm-colonies are the best possible means for the after-care of consumptives.

THE July number of the *Journal of Comparative Neurology and Psychology* consists of a monograph, by Mr. M. E. Haggerty, on imitation in monkeys. To the lay mind there will appear no question as to the power of monkeys to learn by imitation. The experimental evidence, on the other hand, has not always been on the side of popular opinion. It is true that Hobhouse obtained experimental evidence of the imitation of human behaviour by monkeys, and that Kinnaman observed two cases in which one monkey, after watching another monkey that had learnt to get food by manipulating a mechanical device, itself repeated the performance; but Thorndike was unable to find any such imitation of one monkey by another, and in neither of the two monkeys studied by Watson was there evidence that the watching animal learnt to get its food by seeing how the other animal got it. Mr. Haggerty bases his observations on no fewer than eleven monkeys. Following previous workers, he places the animals "in the presence of simple mechanical devices, the manipulation of which opened doors, disclosed openings, or dropped food into the experiment cage." The important feature of his paper consists in the extraordinarily detailed record of the movements of the monkeys while under experimental conditions. The seven mechanical devices with which the monkeys were at various times confronted yielded sixteen cases of successful imitation (three of which were immediate), five cases of practically successful imitation, and five failures. Seven of the monkeys imitated in every form of test, two failed absolutely, while two succeeded in some tests but failed in others. The statistical results, however, are of less interest than the valuable description of the facts of behaviour, inasmuch as there is doubt as to what shall be allowed to count as imitation. In the present state of the subject it is observation that is needed, and this Mr. Haggerty's paper supplies in abundance.

THE June number of *Petermann's Mitteilungen* contains a short paper on the climate of Siam, by Dr. W. Gerbing, which deals specially with the observations made by Dr. Hosseus during journeys in 1904 and 1905. Little is known of the meteorology of the mountainous regions of the Laos States, where Dr. Hosseus spent most of his time, and the observations are therefore of considerable value. They consist chiefly of seven months' records kept at the mission station at Djeng Mai by Dr. Harris, and temperature observations made *en route* and during halts in climbing expeditions on the Dai Sutep.

THE Bulletin of the American Geographical Society (vol. xli., No. 8) contains an article on the Stonington Antarctic explorers, by Mr. E. S. Balch. The article is based on letters and papers belonging to Mrs. Richard Fanning Loper, of Stonington, Connecticut, who inherited them from her father, Captain Alexander Smith Palmer. These papers are few in number, as most of the Antarctic

records of the Palmers were destroyed by fire in 1850, but they afford much valuable fresh information about four very fruitful exploring voyages, and throw many new sidelights on the formerly important sealing industry in the South Seas.

THE August and September numbers of the *Bollettino* of the Italian Geographical Society contain a report on the Messina earthquake of December 28, 1908, by Dr. Mario Baratta. The author gives the results of a full examination of the scene of the earthquake and a comparison of its effects with those of the earthquake of 1783. A number of illustrations and detailed maps accompany the report.

A SUPPOSED ancient canoe was recently discovered, embedded in sand below water (not in peat) near Lochmaben. It is formed of a single oaken trunk, and is about 13 feet long and 2 feet broad, with sides which can hardly have been 1 foot in height. The bottom is flat and smooth. On the inside there are two rows of neatly drilled holes, in which were wooden pegs. These holes are at intervals of 18, 21, 24, and 27 inches, and lie in shallow grooves close to the sides of the canoe. The bow has a distinct resemblance to that of a dug-out canoe, and it is of course possible that this may be an ancient boat with ribs to which rough planks were tied, but the evidence for this theory is hardly convincing. It differs greatly from the dug-out canoes found at Lochrutton and Friarscarse, which were probably used by the dwellers in the crannoges which existed in those lochs. We have to thank Mr. Thomas Henderson, of Lockerbie, for the measurements given above, which would seem to show that the people who made the holes used a foot rule divided into 12 inches. It is very likely, however, that a flat-bottomed boat of this kind might have been used in the loch at almost any period from 1200 A.D. to 1600 A.D.

ACCORDING to the *Jewish World*, the French expedition has made further notable discoveries at Susa, the Shushan of the Bible, the ancient Elamite capital. In the Acropolis the explorers found, superimposed one above the other, the remains of three cities dating back to B.C. 4000, and beneath these other settlements of the prehistoric period. The most important discoveries were three black stone pillars, on which was inscribed the law code of King Hammurabi of Babylon. The site appears to have been occupied by the Babylonians earlier than B.C. 2800. Subsequently the Elamites regained their independence, and retained possession of the city until B.C. 649, when it was sacked by Assurbanipal, King of Assyria.

PHYSICAL anthropologists in search of a new test of race to supplement that of the cephalic index, which no longer commands the authority once attributed to it, will welcome the essay, reprinted from the fourth volume of the *Philippine Journal of Science*, by Mr. R. B. Bean, entitled "Filipino Ears, a Classification of Ear Types." The author claims that he established for the first time a seriation of human ears, and that each ear type is associated with a physical variety of man. Most of the Filipino ears, except those of some long-term convicts, agree with the European type, and those varying from this standard are of an older morphological class. The Spanish population of Manila has ears closely agreeing with the European types among the Filipinos. In this, as in other characteristics, Chinese influence is apparent. He concludes that prehistoric Europeans have probably to some extent affected this ear type, and that Chinese ears are longer than those of Europeans, Filipinos, or Indians, because the Chinese population is composed more largely of the long-eared European types (northern, sub-northern, and Cro-Magnon). Ear type he believes to be to some extent independent of

pigmentation, because the same type of ear is found in blonde and brunette Europeans, in dark- and light-skinned Filipinos, in dark-skinned Indians and light-skinned Chinese. It is improbable that his views of the permanence of ear type as a test of race will be accepted without criticism, but, at any rate, this monograph, with its large selection of photographs, raises a new and interesting problem.

AN interesting article on the climatic features of Wyoming and their relation to "dry-farming," by Mr. W. S. Palmer, section director, is published in the *U.S. Monthly Weather Review* of February last. From systematic data collected during the last seventeen years, it appears that the average annual rainfall of the State is 13.7 inches; in some parts the amounts vary from about 5 inches to 20 inches, and crops are now being successfully produced by the dry-farming method in semi-arid regions where a few years ago it was considered that the precipitation was not sufficient for the purpose. Prof. C. Abbe explains that the expression dry-farming may be considered as an abbreviation of dry-land-farming, and that the method consists in giving up the attempt to raise crops every year, and attempting instead so to conserve and utilise the moisture as to secure a crop every two or three years. Success depends essentially upon the annual quantity rather than upon the seasonal distribution of precipitation and evaporation.

IN the valuable meteorological charts of the Atlantic and Indian Oceans issued by the Meteorological Office for October, 1909, it is pointed out that the Southern Ocean has been remarkably free from icebergs and drift-ice throughout the first seven months of this year. Icebergs were frequently passed in 1908, and during the first five months of 1909 some were seen between latitude 52° and 59° S. and longitude 90° and 130° W., the loftiest being 300 feet high; but not a single berg has been sighted in the vicinity of Cape Horn. During the past quarter of a century many icebergs having an altitude of not less than 1000 feet have been met with in the Southern Ocean.

THE use of light filters in spectroscopic work whenever it is necessary to shut out all but a particular portion of the spectrum is so simple an expedient that we venture to direct attention to a list of Wratten light filters which has recently been issued. They consist of thin films of gelatin coloured with organic dyes, and the list gives the spectrum of the light transmitted in each case. One of the most useful for spectroscopic work appears to be the mercury green line filter, which is transparent for the mercury green line, but opaque for all the other mercury lines.

A DETAILED study of the lengths of the waves emitted by many of the ordinary forms of generators of short electric waves has been carried out by Messrs. H. W. Webb and L. E. Woodman at Columbia University, and the results are given in the August number of the *Physical Review*. The object of the authors was to establish such definite relations between the dimensions and electrical properties of the generators and receivers of the waves as to enable future workers to calculate the wave-length with certainty from the dimensions of the apparatus used. The method employed was Boltzmann's, the beam sent out by the generator being reflected at two mirrors, and the two half-beams brought together to produce interference. Rod, cylinder, Righi, and other generators were tested, and the wave-length measured in each case, a non-selective receiver being used. For apparatus of the same type, but of different size, the wave-length is proportional to the linear dimensions of the apparatus.

AN interesting paper on sparks as indicators of the different kinds of steel was contributed by Mr. Max Bermann, Budapest, at the meetings of the International Association for Testing Materials, held in Copenhagen early in September. An abstract appears in *Engineering* for September 17, from which we learn that the author stated that the influence of the emery-wheel on the nature of the sparks was far outweighed by that of the quality of the steel. It seems from the author's experiments that the spark ray gives a precise indication of the quality of the metal, and may be so applied in practice. Pointed branching lines denote carbon steel (Siemens-Martin); leafy ends of the branching lines indicate Siemens-Martin steel containing a high percentage of carbon; spark pictures, with a blossom-branch-like appearance, are obtained from ordinary tool steel, and so forth. The author states that the spark test is so sensitive that it gives clear indication of a difference of 0.01 per cent. of carbon, and could be resorted to in the course of the Siemens-Martin process for testing the bath and also for the inspection of the finished material.

AMONG other interesting articles in the August number of *The Central*, the organ of the Old Students' Association of the Central Technical College, City and Guilds, is one on pipes for use underground, by Mr. H. A. Humphrey. In this article the writer emphasises the great value of a proper covering for steel pipes. Thin bituminous coatings, obtained by dipping in hot mixtures, is liable to be destroyed in places by the subsequent handling of the pipe. What is wanted is a coating which has elasticity and offers greater mechanical protection. The South Staffordshire Mond Gas Company followed the recommendation of the author for its mains, extending over an area of 120 square miles, a great portion of which lay in the "Black Country," thus rendering the mains liable to subsidences and to attacks from sulphur and acid compounds. The steel pipes were coated once with asphaltum, then wrapped round with Hessian or canvas, and afterwards again coated with asphaltum, the result giving a thick, tenacious coating of sufficient elasticity and strength. Five years' experience is now available, and has proved that even under the worst conditions such a coating, when properly applied, is an absolute preservative against corrosion.

OUR ASTRONOMICAL COLUMN.

OBSERVATIONS OF MARS.—Further results of his observations of Mars are published by M. Jarry-Desloges in No. 4358 of the *Astronomische Nachrichten* (p. 224, September 24).

Changes are becoming more numerous, and the canals more visible. The observations made at the Massegros Observatory (Causse de Sauveterre) showed a new canal on Libya, but the Hellespontus was no longer visible. The Indus was seen to be intercepted at the estuary of the Oxus, and Syrtis Major and the Baie du Méridien were intersected. Since September 3, both at the Revard and the Massegros stations, a clear band traversing the Auroræ Sinus was recorded. The Revard plateau observing station is being dismantled before it becomes snow-bound, and the instruments are to be remounted on the plains of the Beauce.

Having occasion to examine some of Prof. Lowell's 1907 photographs of Mars, M. Antoniadi was struck by the absence of the dark band which, according to visual observations, is circumjacent to the polar snows. Whilst recognising the possibility that this may be due to the photographic encroachment of the neighbouring bright area, M. Antoniadi does not think that this is the probable explanation; he would rather believe that in the visual

observations the phenomenon is a subjective one, the appearance of a dark band being produced by contrast with the bright cap.

Some interesting letters, describing the observed phenomena, and drawings, communicated by MM. Jarry-Desloges and Antoniadi to Signor Schiaparelli, are published by the latter in No. 9, vol. iii., of the *Rivista di Astronomia* (Turin).

THE RECENT MAGNETIC STORM AND AURORA.—From Mr. Basil T. Rowsell we have received an account of an auroral display observed by him, at St. Martin's, Guernsey, on the night of September 25, the date of the magnetic storm described in *NATURE* for September 30 (p. 395). On going into the garden at 8 p.m. (G.M.T.) Mr. Rowsell was struck by the appearance of a rosy glow, at an altitude of about 60°, in the E.N.E. sky. This glow brightened and then faded away, or was obscured by misty clouds and, possibly, moonlight, until at 8.10 p.m. no trace of it was to be seen; nor could it be discerned at 9 p.m. when the sky was partially clear. That it was a true auroral display which he observed Mr. Rowsell has no doubt, and he suggests that, had the sky been clear, a good, if brief, display might have been seen at Guernsey.

ELEMENTS AND EPHEMERIS FOR HALLEY'S COMET (1909c).—A set of elements, computed by the Russian Astronomical Society, for Halley's comet is published in No. 4358 of the *Astronomische Nachrichten*. The perturbations for the period November 15.9, 1835, to December 13, 1909, were computed by the method of mechanical quadratures, and the time of perihelion passage is given as 1910 April 23. An ephemeris which accompanies the elements gives positions for every tenth day from September 4 to December 23, and agrees fairly well with the position determined, for September 11, from Prof. Wolf's photograph.

DOUBLE-STAR OBSERVATIONS.—In No. 4350 of the *Astronomische Nachrichten* Prof. Doberck compares the observations of a number of double stars, made by various observers, with the data deduced from the published orbits. For twenty-three objects he gives the places where the orbits were published, the years in which observations were made, and the differences, for each observer, in angle and distance. The names of the observers are given in abbreviated form in accordance with a comprehensive list published by Prof. Doberck in No. 4346 of the same journal.

A NEWLY DISCOVERED NEBULA CLUSTER IN CETUS.—In No. 4352 of the *Astronomische Nachrichten* Prof. Wolf announces the discovery of a small cluster of nebulae in the constellation Cetus. The position of the cluster is $\alpha=2\text{h. } 50\text{m.}$, $\delta=+54^\circ$ (1855.0), in a region which is generally very barren in these objects. The new object is very faint, with a central condensation, and has a filamentous appearance.

OBSERVATIONS OF VARIABLE STARS.—No. 4352 of the *Astronomische Nachrichten* is devoted to the discussion of twenty stars of which the variability is doubtful or small. The observations were made, photometrically, at Potsdam, by Herr W. Münch, during the period September, 1908, to March, 1909, and are discussed at some length.

TERRESTRIAL REFRACTION IN EGYPT.—No. 33, vol. iii., of the *Cairo Scientific Journal* contains an interesting discussion of some observations of vertical refraction made by Mr. Xydis at Alexandria. The observer found a well-marked diurnal variation which, in November, 1908, gave for k , the coefficient of refraction, values ranging from 0.0497 (at 9h.) to 0.1186 (at 17h.); frequently the value, which is usually positive, was found to be negative. The observations are also discussed by Messrs. Craig and Keeling, the latter pointing out the difficulties inherent to observations of vertical refraction, especially when settings are made on a sea horizon. Observations made at Helwan Observatory in November, 1908, showed the refraction to vary between 0.781 and 0.101, and, when compared with others made in June, showed that k is much smaller in summer than in winter, the values ranging, in June, from 0.368 to 0.076. It also appears that the refraction in Egypt varies much more than in European countries.